Virginia Futures FORUM

Competing in the 21st Century

Moving Virginia's Human Capital Meter

The Virginia Futures Forum

The Virginia Futures Forum is sponsored bythe Council on Virginia's Future, the Tobacco Commission, Virginia Tech and the Virginia Workforce Council. The Council on Virginia's Future and Virginia Tech established the forum to help sharpen the focus about the long-term public policy issues facing the Commonwealth. Co-sponsors for this year's forum are the Virginia Tobacco and Indemnification Commission and the Virginia Workforce Council. The forum is designed to begin a dialogue between leaders from across the state on mutual issues of concern.

Council on Virginia's Future

Created by the 2003 General Assembly, the Council's purpose is to create a vision of Virginia's future and a system for state government that aligns with and supports achievement of the vision. Through the creation of the Roadmap for Virginia's Future, a process that achieves results though long-term planning, budgeting, performance measurement, and continuous improvement, the Council provides the long-term policy framework for governing effectively in the 21st century. In addition, the Council has the responsibility for identifying major issues impacting Virginia's future and creating public dialogue about those issues and seeking out innovative approaches to addressing them.

Virginia Workforce Council

The Virginia Workforce Council (VWC) is a business-led board that acts as the principal advisor to the Governor and provides strategic leadership to the state regarding the workforce development system and its efforts to create a strong workforce aligned with employer needs. The VWC is also charged with serving as the State Board for the federal Workforce Investment Act (WIA), setting policy and standards for the local Workforce Investment Boards (WIBs) and One Stop Centers and recommending specific uses for the WIA statewide discretionary funds.

Virginia Tech

Founded in 1872 as a land-grant college, Virginia Tech has grown to become among the largest universities in the Commonwealth. The university is dedicated to putting knowledge to work through teaching, research, and outreach activities and to fulfilling its vision to be among the top research universities in the nation. Virginia Tech serves the citizens of the Commonwealth through its main campus located in Blacksburg and other campus centers in Northern Virginia, Southwest Virginia, Hampton Roads, Richmond, and Roanoke.

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Tobacco Indemnification and Community Revitalization Commission

The Tobacco Indemnification and Community Revitalization Commission is a 31-member body created by the 1999 General Assembly. Its purpose is to make payments to farmers to compensate for the decline of tobacco quotas and to promote economic growth and development in tobacco-dependent communities in southside and southwest Virginia.

Issue Framing Workgroup

The development of the three policy proposals that are the foundation of the issue book were developed by community leaders from across the state who lent their time and energy to help conference organizers pull together the broad topics of the book. A special thanks goes to the participants in the issue framing workgroup. They are:

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COUNCIL ON
VIRGINIA'S FUTURE

Virginia Tech
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VIRGINIA POLYTECHNIC INSTITUTE
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CONTENTS

Competing in the 21st Century:
Moving Virginia's Human Capital Meter

Framing the Human Capital Development Issue 2
Complexity, diversity, and an extraordinary rate of change will characterize the economic and workforce development arenas of the 21st century.

The Economy and Education Connection 3
The transformation of the U.S. economy toward higher-skilled jobs has led to an increase in productivity and higher living standards.

Approach One 9
Align education and training with strategically targeted industry clusters and drivers of innovation and research.

Approach Two 13
Target improvements in the existing education and skills training systems so that every individual is prepared for the workforce and/or continued education.

Approach Three 17
Empower the businesses, individuals, and communities most directly affected by economic shifts.

Preparing Virginia's Human Capital for the Future: Comparing Approaches 21
The "issue map" presents the three approaches the forum will consider.

INTRODUCTION

Framing the Human Capital Development Issue

Complexity, diversity, and an extraordinary rate of change will characterize the economic and workforce development arenas of the 21st century. Globalization and an ever-increasing use of technology will impact businesses as never before.

In the past, low business costs were a primary determinant for business location or expansion decisions, but the availability of a skilled labor pool and enhanced quality of life will drive these decisions in the future. Virginia must now prioritize the task of creating a workforce advantage that is both globally and domestically competitive. The Commonwealth must establish an approach that will grow, recruit, and retain the necessary workforce talent and leverage public and private resources in an unprecedented manner.

Creating a workforce advantage requires us to talk with each other about what the Commonwealth can do to meet the human capital requirements of tomorrow's economy. It means understanding how education and skills training, in part, drive economic prosperity. When we speak of human capital, we mean that people have a stock of assets they posses in the form of knowledge, skills, health, and values that allows that individual to gain employment, earn a living, and otherwise contribute to the economy. Thus, human capital policy stands in the intersection of several policy arenas, including education, workforce development, and economic development.

To engage the Commonwealth's citizens in deliberation about human capital development, this issue book first presents a snapshot of the importance of educational attainment and skills acquisition to individual and regional economic prosperity. It then describes and compares three approaches to the issue of developing the Commonwealth's human capital policies. The approaches are intended to serve as a "jumping off" point for discussions, rather than as an end point for what ought to be considered.

About deliberative dialogue . . .

In a democracy, citizens must come together to find answers with which they can all live while acknowledging that individuals have different opinions. This issue book is developed for the 2005 V*irginia Futures Forum*, where participants will look at the human capital development public policy issue from several perspectives and will discuss the likely consequences of those choices. Deliberation is not simply discussion, nor is it a debate where someone wins and someone loses. Instead, deliberation encourages citizens to weigh carefully the advantages and disadvantages of different approaches and come to a common ground, a sense of the perspectives with which they can live. Although participants do not have to agree completely on every point, they can move from an individual perspective to the kind of understanding from which public action and good public policy may result.

The Economy and Education Connection

Many changes have occurred in our nation's economy and educational attainment levels over the past several decades. In 1950, 60 percent of all U.S. jobs were classified as unskilled, and the adult population averaged a little over nine years of education. By 1997, only 15 percent of all U.S. jobs were classified as unskilled, and the adult population approached an average of 12 years of education.

The transformation of the U.S. economy toward higher-skilled jobs has led to an increase in productivity and higher living standards. For example, per capita income in the United States rose 179 percent in real terms since 1950 and stood at $32,937 in 2004. In Virginia, per capita income has risen 262 percent over the same period.

As one would expect, skilled jobs generally require more education. People with more education tend to have lower unemployment rates, shorter durations of unemployment, and higher wages than those with lower educational levels (see Figure 1). Over the past 25 years, the earnings gap between college-educated individuals and those without a college degree has been widening.

In fact, when earnings are adjusted for inflation, individuals who did not earn a college degree saw small increases in earnings or even declines between 1975 and 2003. In other words, the living standards of these individuals have been eroding over the past two decades. Workers with at least a college degree over the same two-year period enjoyed higher living standards as they saw their paychecks not only keeping up with inflation but also surpassing it (see Figure 2). Diverging trends in the wage differentials between workers with college-degrees and those with high school degrees or some college jumped from 57 percent in 1975 to 83 percent in 2003.

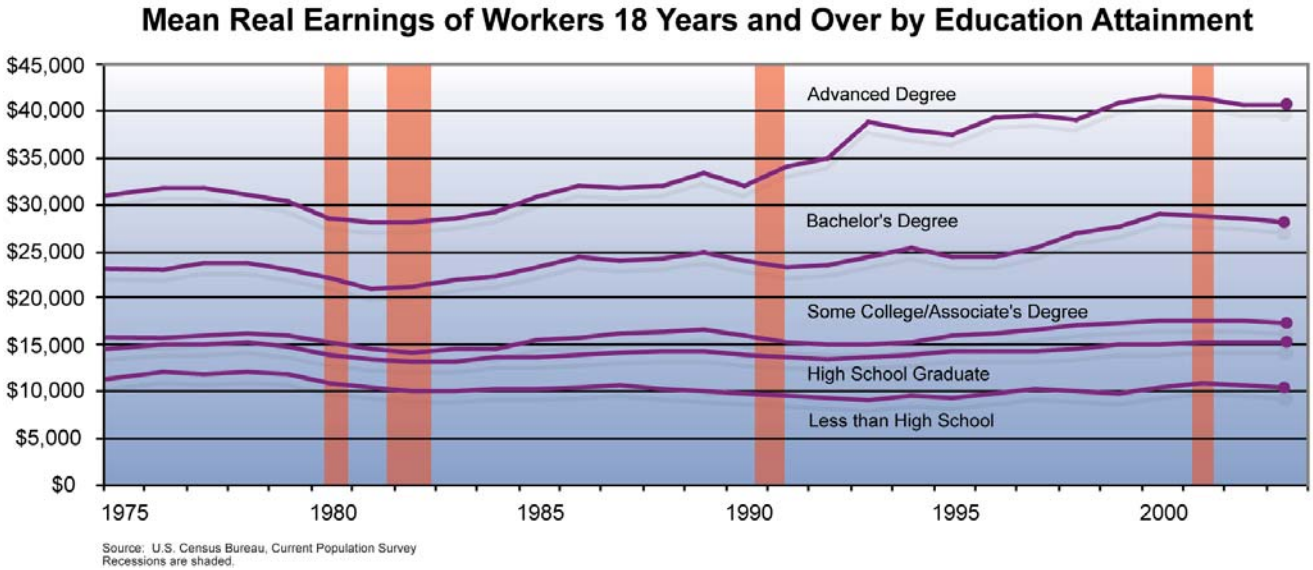
Figure 1

Education Payoffs for the United States

Unemployment Rate, 2003 (Percent)	Education Attained, Full-Time Workers, 25 and Older	Median Annual Earnings, 2003 (Dollars)
2.1	Doctoral degree	70,148
1.7	Professional degree	67,964
2.9	Master's degree	55,328
3.3	Bachelor's degree	46,800
4	Associate's degree	34,944
5.2	Some college, no degree	32,344
5.5	High school graduate	28,808
8.8	Some high school, no diploma	20,592

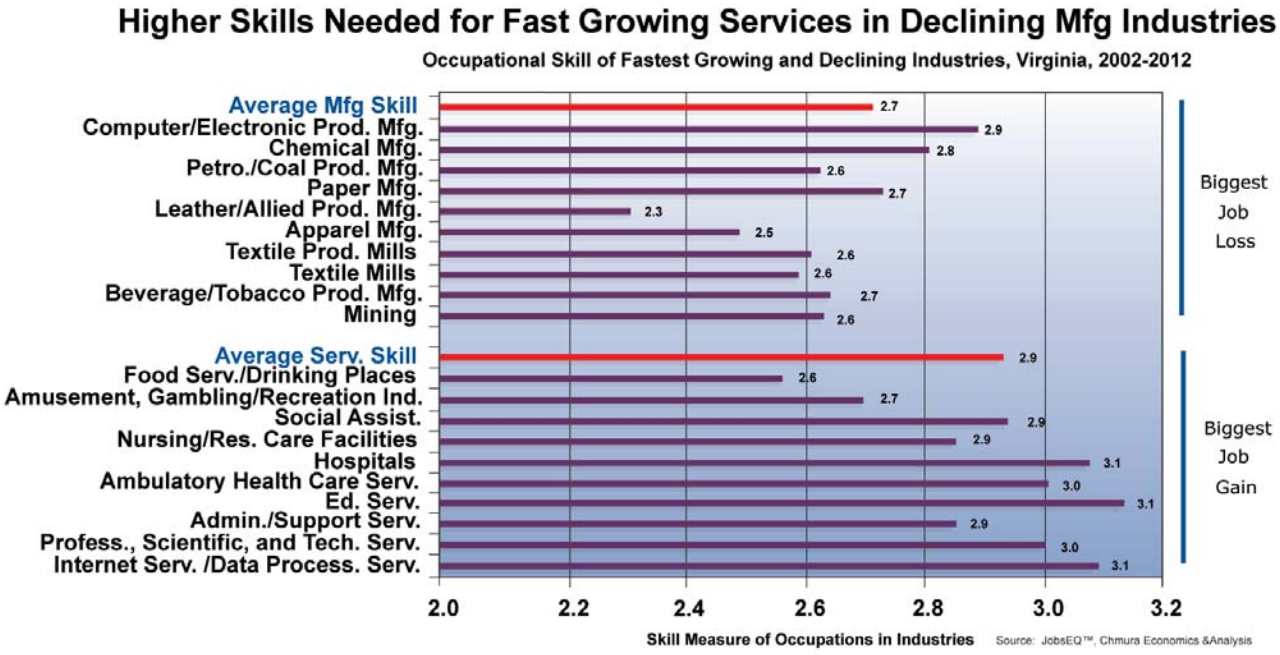
Source: U.S. Bureau of Labor Statistics and Census

Figure 2
For the United States



The higher wage paid to more educated and skilled workers reflects a growing skills gap in the nation. Based on the occupations and skills needed by industries, there are too many low-skilled workers in the United States and not enough high-skilled workers. Employment for many industries that use largely low-skilled labor, such as textile and furniture manufacturing, has dropped as firms move operations overseas to take advantage of lower-cost labor. The excess supply of these workers in the United States has en-

Figure 3



Note: Skills noted above are measured by the U.S. Department of Labor (O*Net) and range from 1 (lowest skill) to 5 (highest).

abled firms to hold wage increases down.

Applying national forecast growth rates to industries in Virginia indicates that the 10 fastest declining industries in terms of employment from 2002 through 2012 are expected to be in those manufacturing sectors where skills are relatively low (see Figure 3). Unfortunately, many of the declining industries are in rural areas. The result is higher unemployment rates and even larger skill gaps in the rural areas compared to urban centers. In contrast, service firms that generally require a workforce with more skills than that manufacturing and those associated with increased medical needs of the population are among the 10 industries that are expected to be the fastest growing through 2012.

Workers will be needed in the medical arena and in areas requiring computer skills (see Figure 4). Many of the occupations in Virginia that will have an excess of workers over the next decade are associated with low skills or job requirements that can be automated.

Education is a strong driver of regional growth both in urban and rural areas. In a recent study, the Kansas City Federal Reserve Bank found that a 1 percent increase in bachelor's degrees translates into a 1.13 percent gain in the percentage of high-knowledge occupations that pay more and grow faster than

Figure 4

Virginia's Top and Bottom 10 Occupation Gaps, Annual Projections through 2013

Occupation Description	Workers Needed
Registered Nurses	591
Computer Systems Analysts	571
Security Guards	469
Computer Software Engineers, Applications	463
Customer Service Representatives	454
Management Analysts	446
Receptionists and Information Clerks	443
Computer Software Engineers, Systems Software	425
All Other Teachers, Primary, Secondary, and Adult	394
Combined Food Preparation and Serving Workers, Including Fast Food	384
Occupation Description	**Surplus Workers**
Secretaries, Except Legal, Medical, and Executive	-886
Stock Clerks and Order Fillers	-823
Bookkeeping, Accounting, and Auditing Clerks	-541
Laborers and Freight, Stock, and Material Movers, Hand	-449
Office Clerks, General	-417
Team Assemblers	-346
First-Line Supervisors/Managers of Office and Administrative Support Workers	-326
Cashiers	-265
Data Entry Keyers	-258
Shipping, Receiving, and Traffic Clerks	-245

Source: Jobs EQ.

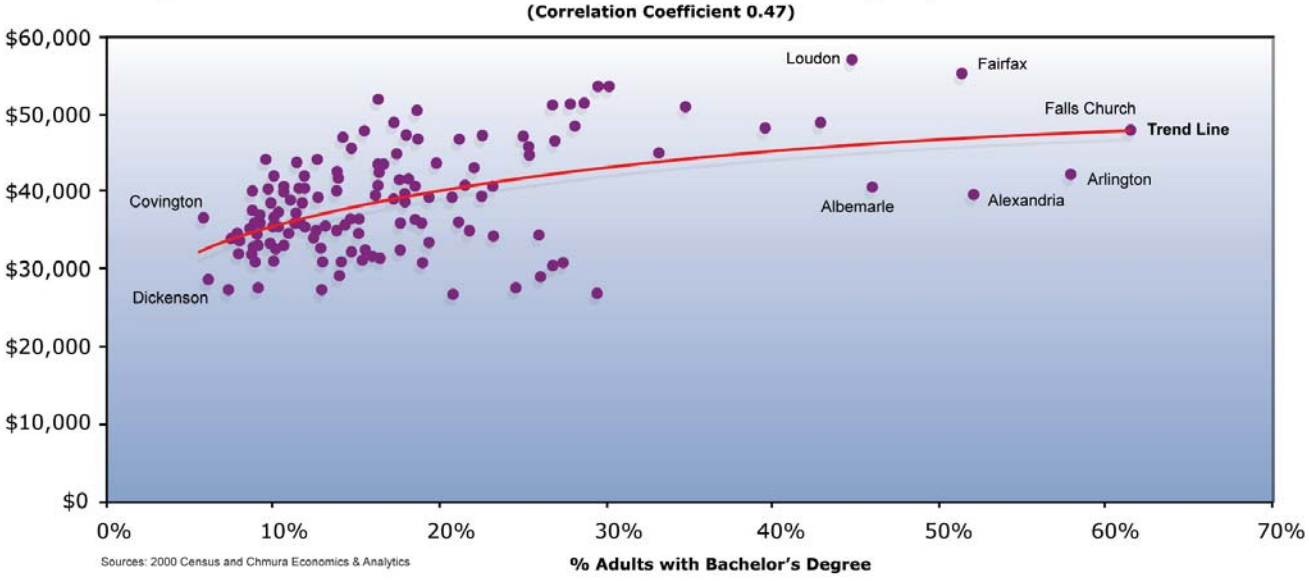
other jobs.[1] In fact, the same study found that education is more important than the presence of interstates to the growth of a rural area's knowledge-based industries.

Education is also an important predictor of the economic well-being of counties and cities across the Commonwealth. Income and education data for Virginia demonstrate a positive correlation between average household income and the percentage of the adult population holding a bachelor's degree or higher (see Figure 5). In fact, five of the six localities in the state with the highest education level are in the fast-growing Northern Virginia metropolitan area. The sixth is Albemarle County, located in the Charlottesville metro area. In contrast, the lowest education levels in the state are in the rural areas of Covington City and Dickenson County, which also have the lowest cost-of-living-adjusted wages

Although higher education is associated with the economic well-being of individuals and regions, postsecondary degrees and industry certifications cannot be obtained without the base of knowledge provided in primary and secondary schools. Unfortunately, there is high variation in test scores by locality within the state in core areas of knowledge, including math (see Figure 6).

Figure 5

Relationship between Education Attainment and Cost of Living Adjusted Household Income



[1] John Henderson and Bridget Abraham, "Can Rural America Support a Knowledge Economy?" Federal Reserve Bank of Kansas City Economic Review, Third Quarter 2004, pages 81 and 91.

Figure 6

Top and Bottom 10 Percent of Students Passing Mathematics by School Division, Spring 2002

	Percentage Passage Rate	Rank
Richmond	89.4	1
Poquoson City	87.7	2
Lexington City	87.5	3
Falls Church City	86.4	4
Chesterfield	85.2	5
West Point	85.1	6
Manassas Park City	83.3	7
James City	82.7	8
Goochland	82.2	9
Prince George	82.0	10
Richmond City	42.0	123
Southampton	41.6	124
Portsmouth City	40.6	125
Brunswick	38.3	126
Lee	37.1	127
Charles City	35.3	128
Scott	30.0	129
Charlottesville City	29.4	130
Franklin City	28.7	131
Petersburg City	27.0	132

Source: Virginia Department of Education

The issues identified in Virginia are not unique to the state. According to the third international math and science study conducted in 1995, U.S. fourth-grade students were above average in both math and science on an international scale. By the time they reached the eighth grade, they had dropped closer to the average.[2] In their last year of high school, their scores were well below the international average.

Further, over 3 million college students in the United States cannot take the regular general education math course. They are classified as developmental math students and are required to take remedial courses first. Of these, over 25 percent drop out and another 25 percent fail the remedial course.

Are We Losing Our Competitive Edge?

We are losing our edge compared with other nations, not necessarily because our performance has declined, but because other countries are performing better than they did in the past. The reduction of our competitive advantage in core skills begins with middle-school students. The distribution of combined math literacy scores of 15-year-old students indicates that many other countries are scoring better than the United States. In China, for example, the literacy score was over 550, compared to less than 500 in the United States.

The increasing number of students attending secondary school in other countries is surprising. Intel Chief Executive Office Craig Barrett summarized the results as follows: China, India, and Russia have a population of about 3 billion. If 10 percent are highly educated, that equates to 300 million people. Twenty-five percent or 75 million are highly educated. From a supply-side perspective, the implication is that knowledge workers in the United States will face greater competition in the future.

"We need to be forward-looking in order to adapt our educational system to the evolving needs of the economy and the realities of our changing society. Those efforts will require the collaboration of policymakers, education experts, and—importantly—our citizens. It is an effort that should not be postponed."

—Alan Greenspan, Federal Reserve chairman, "The critical role of education in the nation's economy," Greater Omaha Chamber of Commerce 2004 Annual Meeting, Omaha, Nebraska, February 20, 2004

[2]The Third International Math and Science Study is a project of the International Study Center, Lynch School of Education, Boston College. A complete set of TIMMS publications is available on the center's website, *http://timss.bc.edu/timss1995i/TIMSSPublications.html.*

How do we respond?

Do we align education and training with strategically targeted industry clusters and drivers of innovation and research? Do we target improvements in Virginia's existing education and skills training systems? Do we empower businesses, individuals, and communities to address their own human capital development needs?

At a minimum, we need to make the necessary information available to decision makers, policymakers, incumbent workers, students, and educators. What occupations and skills are expected to be in demand over the next decade, and which ones are becoming obsolete? Disseminating this information can assist individuals, businesses, and educational institutions in planning for a better future.

We are competing in a world in which economic prosperity increasingly depends upon an educated and skilled workforce. How do we move Virginia's human capital meter to meet our future economic needs? Do we have a human capital development strategy to see that all regions of the Commonwealth can compete in a national and global economy? If we want to create a human capital advantage for the Commonwealth, we cannot postpone this discussion.

APPROACH ONE

Align education and training with high-growth industry clusters and drivers of innovation and research.

Invest in high-growth sectors, research, and higher education. Provide impetus for innovation and progress in a global economy.

Why This Approach?

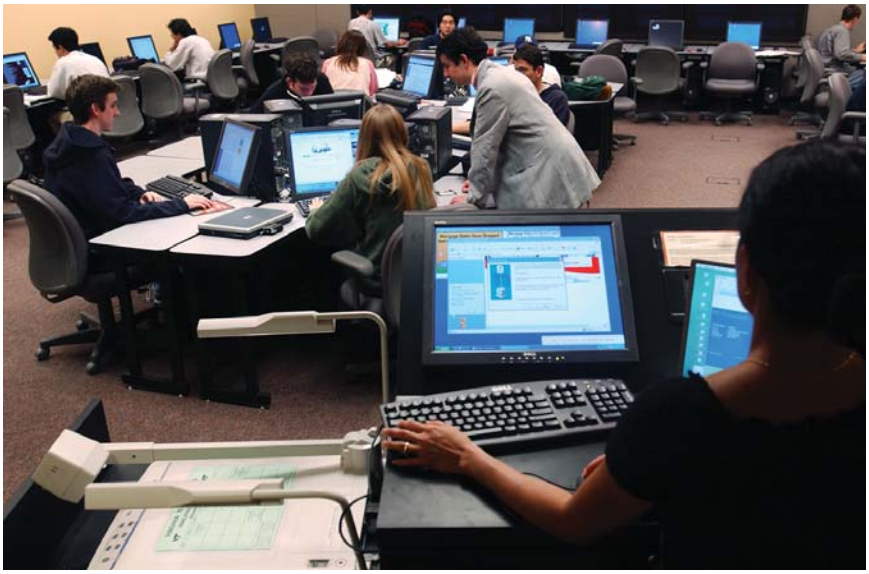
The dawning of the 21st century made us even more aware that if Virginia is to continue leadership in the nation's economy, resources will have to be invested strategically. This approach maintains that we must help citizens find a way to develop special skills for 1) high-growth industry-aligned clusters and 2) centers of innovation that spur new ideas, new products, and new jobs.

In this approach, the partnerships among business, academia, nonprofits, and other organizations serve as a driver for the economy and could attract the political influence to accomplish the objectives set. Virginia could develop its own workforce while attracting employers, employees, and entrepreneurs from throughout the world. The opportunities created would assist in keeping Virginia graduates in Virginia. Further, a secondary effect would be the impetus to strengthen K-12 as feeders to research and clusters.

A Cluster Working Group of key leaders in Oregon inventoried more than 100 ongoing and completed cluster efforts. The leaders designed a new framework for clusters that will network private and public sector practitioners and strengthen the analysis and strategy development for clusters. Promising efforts tie workforce development efforts to industry clusters around the state and include training about industry clusters in M.B.A. programs.

What Should Be Done?

Acknowledge the Importance of Brainpower and Innovative Ideas.



The value of intellectual capital will skyrocket in the future. As a rule, knowledge-based jobs pay more and are less susceptible to recession than other industry sectors. The two most common themes among the existing and emerging jobs with strongest growth are 1) a significant investment in education—for example, nanotechnologists, bioinformatics specialists, computer security consultants, plastic surgeons—and 2) the ability to be out front with new ideas—for example, those who use the Internet, and global markets. Virginia citizens must take advantage of higher education and opportunities to develop innovative ideas.

Match Workforce Education and Skills to the State's Economic Competencies.

Today's economic map of the world is characterized by what Michael E. Porter labels clusters: critical masses in one place of linked industries and institutions—from suppliers to universities to government agencies—that enjoy unusual competitive success in a particular field. The two most famous examples are found in Silicon Valley and Hollywood. Clusters increase productivity, drive innovation, and stimulate the formation of new businesses.

To stimulate collaboration for aligning education and training with industry clusters, the Commonwealth should identify high-growth industries and prepare a resource inventory of higher education and government programs to meet those industry-specific business needs. Understanding Virginia's statewide and regional clustering patterns will reveal other industries that may be good targets to grow, recruit, or retain.

Value R&D for Long-Term Sustainable Growth.

Clusters and the economy in general must be supported by an emphasis on research and development. The history of the most successful high-technology regions, such as Boston's Route 128 Corridor and Silicon Valley, can be traced to university research excellence funded largely by federal agencies. This approach, then, would argue that top-ranked universi-

R&D Models

Two different approaches to research and development are the Massachusetts Institute of Technology Industrial Liaison Program, established in 1948, and the North Carolina Research Triangle Park, created in 1959.

- *The MIT program connects member companies with the latest research developments at MIT by identifying faculty to propose research grants of mutual interest.*
- *The North Carolina Research Triangle Park (RTP) is a public/private, planned research complex with 131 organizations located in the park. Research is conducted in a wide variety of fields. Collaboration among universities, businesses, and global companies is key to its success.*

ties spin off new companies, attract high-tech industries, and create better paying jobs for citizens of their state. According to a report from the Milken Institute, of the top 30 high-tech metropolitan areas in the United States, 29 were home to or within close proximity of a major research university. States with more than one top-ranked university have a far greater proportion of their labor force in the high-tech sector (65.5 percent).

A 2005 study by the State Council of Higher Education for Virginia (SCHEV) reports that the state ranked fourth in the nation in terms of federal government research, largely due to the presence of NASA and the military and the state's proximity to Washington, D.C. The same report showed Virginia holding the 16th spot among states for industrial research and development. Yet, according to the SCHEV report, higher education accounts for only about 10 percent of Virginia's research efforts, ranking the state 17th for university-based research and development. Therefore, to increase the value for R&D, each university could identify an area of excellence and establish relationships with businesses, agencies, and non-profit organizations around that strength. In addition, supporters of this approach think that the General Assembly should grant to a state entity the authority, funding, and staff to coordinate the academic research of Virginia colleges and universities with business, government, and other associations.

Prepare the Emerging Workforce for High-growth Industry Clusters and R&D.

To implement this approach, the Commonwealth will have to ensure its educational pipeline produces individuals with the knowledge and skills necessary to support both a statewide and regional cluster development strategy. Most occupations associated with high-growth industries and R&D require postsecondary education and/or training. Therefore, an added emphasis needs to be placed on college participation and completion in the Commonwealth. To this end, opportunities for college-bound students should be increased, including funding and access. Mentoring programs and research opportunities for undergraduate and graduate students should grow.

To prepare the Commonwealth's youth for knowledge-based jobs, emphasis on academic standards throughout the K-12 system, specifically in the areas of math and science, must accelerate. Expansions could be made in dual enrollment, achievement of top advanced placement scores, special programs for gifted children, and matriculation for high school students in classes at community colleges and four-year colleges and universities. Further, teachers and guidance counselors can increase students' awareness of the education and skill requirements necessary to pursue careers associated with high-growth industries and R&D.

Workforce and economic development policy should be linked through career cluster strategies that support high-growth industries. Community colleges, in partnership with employers and economic developers, can identify career ladders within their communities. Incentives should be available to assist workforce investment boards, businesses, and other associations in helping individuals in entry-level positions move to more skilled occupations associated with high-growth industry clusters.

Embrace, Rather than Fear, Globalization.

In this approach, citizens would value knowledge of global developments, languages, and the ability to succeed in a global marketplace. The ability to import skills, products, and ideas from around the world would be fostered in educational programs and in cluster developments.

What the Skeptics May Say

Those who are skeptical of this approach may ask, "Would business be a driver?" With a shorter-term profit motive, can business invest in research? Opponents would be quick to point out that university cultures favor long-term basic research. Universities may fear that a focus on clusters and the application of research would detract from the university's primary role of educating students and contributing to knowledge for long-term gains. A large investment in research facilities, graduate student tuition, incentives for faculty, and other researchers would be needed. Some will ask if large portions of our citizenry will be left behind.

A coordinated approach to research or clusters may be resisted by those who fear that their geographic areas or primary industries may not be favored. Finally, the success of this approach is dependent upon our ability to identify areas of research investment. How good is our crystal ball in predicting the future?

Trade-offs

This approach emphasizes the specialization of skills to align with clusters and emphasizes high-level research skills as a driver of the economy. Accepting this approach may result in a trade-off of fewer opportunities for those whose skills are not directly involved in the clusters and who do not have the education to advance in a fast-paced research focused economy.

References and Further Reading

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APPROACH TWO

Target Improvements in Virginia's Existing Education and Skills Training Systems

Improve Virginia's K-12 educational system to ensure adequate preparation for continued education or employment. In partnership with federal and local governments and the private sector, the Commonwealth should ensure a strong educational and skills foundation, workforce training opportunities, and life-long learning access for all citizens

Why This Approach?

More than ever before, Virginia's economy is dependent upon an educated and skilled workforce. The new economy is global in nature, rapidly changing, and information-based. Its dynamics are as applicable to manufacturing and the service sectors as they are to the high-tech sector. Comparing the human capital of our youth to the skills required by the jobs of the 21st century global economy, the mismatch is startling. Seventy-eight percent of all new workers entering the workforce have the skills for only the bottom 40 percent of new jobs, while only five percent have the skills for the top 40 percent of new jobs (Hershberg 1996).

To maintain a competitive workforce advantage, Virginia must reinforce the needed investment in human capital development, starting with children entering pre-school and continuing throughout their work lives.

This approach would allow Virginia to establish long-term, effective solutions to the challenge of workforce development, thus making the state a leader in the national and global economy.

What Should Be Done?

Create a New Model for K-12 Education.

Advocates of this approach maintain that Virginia's primary and secondary educational success lies not in the creation of brilliant elite but in developing every student's capabilities to a high level. They agree that the success of the lowest 50 percent is probably a better predictor of suc-

cess in the knowledge economy than the success of the top 25 percent (Conway 2002). Further, schools must pay as much attention and value to the development of technical and vocational skills as they do to college preparatory curricula to provide every student with professional and social skills for the new economy. A new model for K-12 in Virginia needs to be created and should include at least the following key elements:

- Implement universal pre-school education programs (math, literacy and reading, art, computer skills, science, and social skills).
- Initiate computer literacy and foreign languages programs at an earlier age, along with a strong emphasis on math and sciences skills.
- Change the "Standards of Learning" test to the "Standards of Learning and Skills" test to incorporate technical and applied skills.
- Improve flexibility in our K-12 system for students to individually pace themselves.
- Initiate year-round schools.
- Enforce mandatory drug testing.
- Adopt a universal school breakfast program.

In addition, the Commonwealth should increase career preparation curricula in K-12, including providing for career development plans that reflect students' academic achievements, skills, and preferences, and provide them with information about their career opportunities. Students and their parents should work together developing these plans to help young people to successfully move across educational levels and into the workplace. Industry/school cooperation, such as that pioneered by Cisco, GM, and SAS, needs to be developed. Tax incentives for business and private investments in schools and greater state financial support for connecting activities that link high school students to private sector jobs during both the school year and summer should be considered.

Further, Virginia should continuously promote teachers' professional development and enhance opportunities for them to improve their computer skills. Supporters assert that this can be accomplished by providing free online courses for continuing education and developing more incentives to attract and retain qualified teachers. Some advocates of the approach propose revising the educational funding formula and giving school boards tax authority.

Increase Labor Market Participation.

According to the Virginia Employment Commission, Virginia's labor force is represented by 3,906,100 workers. The Bureau of Labor Statistics projects a 14 percent increase in U.S. job openings between 1998 and 2008 but a labor force growth of only 12 percent over the same period. The female labor force will grow more rapidly than male, while the Asian and Hispanic/Latino labor forces are projected to increase faster than other groups. Census projections suggest a pronounced decline in the number of prime age Southern workers over the next 25 years, which could seriously dampen economic growth (Conway). If this trend continues, new workers will not be able to fully replace retiring workers. Current demographic trends show our working population growing older.

Virginia should develop policies to increase labor market participation of specific populations, such as older workers, people with disabilities, minorities, women with children (universal childcare will be required), and former inmates. Further, easy access for migrant workers to the state system of ESL programs and professional certification must be provided. It is important to enhance adult learning in the workplace and community to meet the skill development needs of those facing barriers to labor market participation. Finally, the state must develop common outcome measures for workforce programs.

Create a Workforce Development System Available to All Citizens.

The ongoing transition to a more technological and skills-intensive economy has already led to skill shortages in the state, as shown in Figure 4 in the beginning of this book. You may recall that Figure 4 also reveals that most of these jobs call for computer skills, even if they don't call for advanced degrees. Unfortunately, many of the workers laid off from Virginia's traditional industries are in regions of the state that show lower educational attainment, as noted in Figure 5. These trends indicate that the Commonwealth should provide all workers and employers with ac-

cess to a well-designed, aligned, and single-point-of-entry workforce development system for recruitment, timely labor market information, skills assessment, and training services responsive to regional needs.

Proponents of this approach would argue that existing government-run training programs are not well coordinated. Within state government alone, dozens of agencies and departments offer workforce development, education, and training programs. Advocates note that at the county level most programs offer services to Virginia's citizens in an uncoordinated and ineffective way–each with different requirements. It is important to create a collaborative realignment of the statewide and regional service delivery systems with new economic and workforce development needs and practices.

In an effort to create equal opportunities for all Virginians, the entire state should be wired for broadband Internet access. Computer access and basic computer skills and literacy training must be provided to all citizens through state funding. Proponents argue that the state must leverage distance-learning options via the Internet to expand classrooms into homes, offices, and training centers, including those in rural areas. Expanding Virginia's use of distance learning technology would offer the opportunity to reach more people with lower costs.

What the Skeptics May Say

The skeptics will say that the Commonwealth currently provides abundant resources to K-12 and career training programs. Moreover, the digital divide may prevent many minority and low-income families, students, workers, and small businesses from having access to technology-based resources, making the cost of innovation much greater for rural areas. It also may not be possible to address the needs of specific populations in the changing ethnic and demographic base.

Many will argue that fragmented government structures and human capital development programs would be hard to coordinate. A further complication is that this approach depends on coordination with other programs that provide crucial support services, such as transportation and health care. Businesses may

claim that this approach introduces few direct employer incentives and may not be willing to offer necessary support.

Trade-offs

If we support this approach, we may trade off the ability to support traditional drivers of the economy, support for higher education and research, and the capacity to create specialized high-performing clusters.

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APPROACH THREE

Empower Individuals, Businesses, and Their Communities

Responsibility for human capital development is best placed with the businesses, individuals, and communities most directly affected by economic shifts and changes. A decentralized system of workforce training and education provides Virginia with the flexibility and capacity to be proactive in the presence of rapidly changing market forces.

Why This Approach?

Virginia is a diverse state proud of its unique regional and community characteristics. The regional advantages, however, are counterbalanced by concern for growing trends of economic, social, and educational disparities that divide the state. For example, Virginia ranks 11th nationally in per capita income at $33,651, whereas Bland County's per capita income is only $19, 687 (U.S. Bureau of Economic Analysis). High school graduation rates in 2003-04 also display disparities, with a Northern Virginia graduation rate of 80.2 percent, while the Southside and Southeast regions had rates of 66.6 percent and 65.4 percent, respectively (class of 2004). While perfect parity between regions, communities, and individuals is an unrealistic goal, the state must give more power and responsibility to its regions and communities to control their social and economic destinies.

Our economy is transforming from a managed economy dominated by large-scale production to an entrepreneurial economy where knowledge and innovation have become the primary growth factors. Small and medium enterprises that rely on entrepreneurial processes and approaches will dominate (Audretsch and Thurik 2004). Therefore, the best way to meet economic challenges and create more economic parity among regions and individuals is through innovation and entrepreneurship. The engines of human capital development–public education and workforce training–need to be flexible and responsive to changing needs and dynamics. Decentralization of decision making and funding discretion to regional and local leadership representing government, business, and education will increase the likelihood that all regions of the Commonwealth will prosper.

ing our potential. Virginia's K-12 education is focused on the subset of college-bound students and the current system of workforce development reaches only a small portion of our population. The business community must partner with public and private education and workforce institutions to ensure that all individuals have access to the education and skills training necessary to create wealth.

What Should Be Done?

Harmful results of the empowerment of centralized institutions include the flight of the young and creative class from the inner city and rural regions to suburban and metropolitan regions (Florida 2004). Business leaders assert that a more decentralized system will provide the specific educational foundation and ongoing skill development to meet their individual needs. Advocates argue that the current, more centralized system provides focus and training for displaced workers on the whole but does little to enhance the skills of employed workers within regions.

Build a Business-driven System.

An essential component of building a demand-driven system is to actively engage local and regional leadership through a "call-to-action" from the highest levels of state government. Business leadership must communicate needed and projected skills sets. In return, the education and workforce system should be responsive to identified needs as a requisite incentive for participation by the private sector. Supporters of this approach state that the current system is not meet-

Fully Implement the Workforce Investment Board Concept

Workforce Investment Boards (WIBs) need to be regional entities empowered to facilitate the delivery of information, resources, and services to students, educators, employees, employers, and the community at large and to connect lifelong learning to broader goals for human capital development. Regional WIBs would be comprised of private enterprise, community colleges, career colleges, K-12 education, higher education, and individual advocacy groups. While the WIBs now provide the primary safety net for our hardest to serve populations, more regionalized WIBs could devote more attention to providing market- and demand-driven responses to human capital needs by leveraging public funding with private investment. WIBs could become more responsible for obtaining primary sources of funding from federal and private foundation grants, participation fees, and other funding sources.

Promote Entrepreneurship.

Building assets—human, financial, or social—plays a fundamental role in developing the capacity of communities and regions. Entrepreneurship and existing firm growth is closely linked to the availability of investment and expansion capital. Diverse groups

of players at local or regional levels need to collaborate to develop localized "entrepreneurial economies" to encourage entrepreneurship and micro-enterprise endeavors, primary engines of wealth creation. An additional charge of more regional-based WIBs would be to develop venture capital funding sources and training programs to support the development of regional and local entrepreneurial capacity.

Make Human Capital Funding Directly Available to Businesses and Individuals.

Funding that is available to both individuals and businesses can best be decentralized and leveraged through increased dependence on market mechanisms to direct spending and accountability. Such market mechanisms come in the form of tax credits and individual training accounts. Supporters call for shifting funding discretion to businesses, communities, and individuals who have the most at stake to ensure that the money is well spent. Some proponents also advocate a "pay to play" criteria in giving business and individuals more control over public funding, asserting that when your own money is at stake, you see that it is well-spent. Research conducted to assess the effectiveness of the Workforce Investment Act (WIA) consumer directed programs indicate that voucher programs, such as Individual Training Accounts, are perhaps the most successful results of WIA (Perez-Johnson 2004).

Connect K-12 Education with Workforce Dynamics.

Regional-based WIBs would also work closely with the state education system to better align SOLs with applied skills and vocational education and to make an Individualized Career Plan (ICP) a part of secondary education curriculum. Supporters of the approach assert that the state already has the mechanism to promote the development of ICPs through the Standards of Accreditation.

Organize an Accessible Information Sharing System by Regions.

Supporters of the individual and community approach would advocate that resources should be dedicated to develop a centrally coordinated information system that would capture and disseminate regional and localized economic and demographic information, projections, and best practices. Believing that information is power, advocates argue that dissemination through regional and local outlets would make critical decision-making information broadly available to individuals, businesses, educational bodies, and local governments.

What the Skeptics May Say

This approach faces primary challenges. Regional leadership in Virginia has been difficult to engage in many policy areas. The short-term profit motivations of the private sector may create barriers to engagement in policy arenas with longer horizon

objectives and processes. Moreover, federal and state controls and mandates will limit the amount of funding discretion that can be decentralized. The approach does not address major work-related challenges, such as transportation, child care, and health care. While supporters of the approach would assert that entrepreneurship must emerge through a bottom-up approach,

others would claim that successful entrepreneurship most often emerges naturally from market forces under a centralized system that provides safeguards rather than incentives (Von Bergen 2003). In addition, both advocates and opponents of this approach express concern that our existing institutions do not place sufficient value on improving the status of our most at-risk citizens. Can this approach address the needs of the disadvantaged through more local advocacy and individual empowerment or will their condition continue to be overlooked?

Trade-offs

While the market-oriented, business-driven nature of the approach could lead to a closer connection and enhanced response to economic shifts, it may also be subject to the downsides of these shifts. In times of economic expansion, the available resources under the approach would be expected to increase. In times of economic downturn, resources would be expected to contract. Since this approach relies on a complex network of participants to lead to better ideas, one result may be continued pockets of prosperity and growth where networks are strong and continued stagnation where leadership and networks are weak.

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Preparing Virginia's Human Capital for the Future: Comparing Approaches

Is the Commonwealth preparing its human capital for the future in order to promote and sustain economic and social growth? Human capital is a way of defining and categorizing people's skills and abilities for employment and for general contributions to the economy. The first annual Virginia Futures Forum will deliberate three approaches to the future development of Virginia's human capital and help participants see the likely consequences of those perspectives. The issue map presented here is a summary of the three approaches. What policy direction should Virginia encourage to develop human capital for the future economy?

COMPARING APPROACHES

APPROACH ONE

Align education and training with high-growth industry clusters and drivers of innovation and research.

Invest in high-growth sectors, research, and higher education. Provide impetus for innovation and progress in a global economy.

Acknowledge the importance of brainpower and innovative ideas

- Citizens must acquire higher education, specialized skills, and creative strategies

Match workforce education and skills to the state's economic competencies

- Identify high-growth industries and programs to meet those industry specific business needs

Value R&D for long-term sustainable growth

- Create collaboration for research clusters with universities, agencies, and industries through a statewide coordinating entity
- Establish R&D centers throughout state
- Encourage research at the undergraduate level and more graduate education

Prepare workforce for high-growth industry clusters and R&D

- Establish strong connections between community colleges and industry clusters
- Increase cluster understanding through school and websites
- Create career ladders for clusters from lower-skilled occupations

Embrace, rather than fear, globalization

- Value languages, abilities in global market

Trade-off

- A trade-off would be less emphasis on those who were not directly involved in the clusters and who did not have the skills to advance in a fast-paced research focus.

What policy direction should Virginia encourage to develop human capital for the future economy?

APPROACH TWO

Target Improvements in Virginia's Existing Education and Skills Training Systems

Improve Virginia's K-12 educational system to ensure adequate preparation for continued education or employment. In partnership with federal and local governments and the private sector, the state should ensure a strong educational and skills foundation, workforce training opportunities, and life-long learning access for all citizens.

Create a new model for K-12 education

- Adopt rigorous academic and applied skills standards for our K-12 system
- Create a better learning environment through control of discipline, drugs, and violence
- Have our schools develop technical and career-related skills
- Create universal pre-school educational programs
- Emphasize continuous teacher development and incentives to attract and retain qualified teachers
- Increase career preparation curricula in K-12, including Career Development Plans and local connections among businesses and schools

Create a workforce development system available to all citizens

- Create a collaborative realignment of the statewide and regional service delivery systems and timely information about marketable skills
- Provide Internet access, computer access, and basic computer skills to all through state funds

Increase labor market participation

- Focus on specific populations, such as older workers, those with disabilities, minorities, women with children, and former inmates

Revise the educational funding formula

- Give school boards taxing authority

Trade-off

- We may trade-off more support for higher education for specialized clusters and research as well as an opportunity to develop a decentralized approach.

APPROACH THREE

Empower Individuals, Businesses, and Their Communities

Responsibility for human capital development is best placed with the businesses, individuals, and communities most directly affected by economic shifts and changes. A decentralized system of workforce training and education provides Virginia with the flexibility and capacity to be proactive in the presence of rapidly changing market forces.

Empower through continued decentralization

- Decentralize human capital development decisions to better connect business with education and workforce training
- Develop different strategies to reflect Virginia's regional differences

Build a business-driven system

- Business must be the driver of human capital development related public policy

Fully implement the workforce investment board concept

- Create regional coordinating councils of K-12, community and career colleges, higher education, and business
- Career guidance should consider regional and local contexts with career assessment tools as accountability measure
- Engage regional leadership for regional solutions to regional problems

Promote entrepreneurship

- Develop entrepreneurial capacity

Make human capital funding directly available to businesses and individuals

- Leverage existing programs with funding from private sector, grant, and federal dollars. Use direct funding streams, such as individual training accounts, vouchers, grants, and tax credits

Trade-off

- While some regions may benefit from a decentralized approach, others may suffer. The ups and downs in the economy will affect strategies. The disadvantaged may suffer.

NOTES